

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

Cys-X<sub>4</sub>-X<sub>5</sub>-X<sub>6</sub>-X<sub>7</sub>-X<sub>8</sub>-X<sub>9</sub>-X<sub>10</sub>-X<sub>11</sub>-Cys, (SEQ ID NO: 110),

wherein:

X<sub>4</sub> is Asn, Glu, Asp, or Met;

X<sub>5</sub> is Leu, Phe, Tyr, Trp, Val, Met, Ile, or Asn;

X<sub>6</sub> is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp, Tyr, Gly, or Thr;

X<sub>7</sub> is Lys, Phe, Asp, Gly, Leu, Asn, Trp, Ala, Gln, or Thr;

X<sub>8</sub> is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln, Trp, His, Arg, Met, Val, or Leu;

X<sub>9</sub> is Gln, Lys, Leu, or Gly;

X<sub>10</sub> is Trp, Ala, or Tyr; and

X<sub>11</sub> is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp, Tyr, Gly, Leu, or Glu.

2. (Original) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

X<sub>1</sub>-X<sub>2</sub>-X<sub>3</sub>-Cys-X<sub>4</sub>-X<sub>5</sub>-X<sub>6</sub>-X<sub>7</sub>-X<sub>8</sub>-X<sub>9</sub>-X<sub>10</sub>-X<sub>11</sub>-Cys-X<sub>12</sub>-X<sub>13</sub>-X<sub>14</sub>, (SEQ ID NO:111),

wherein:

X<sub>1</sub> is Asp, Asn, Ala, or Ile;

X<sub>2</sub> is Trp;

X<sub>3</sub> is Val, Ile, Met, Tyr, Phe, Pro, or Asp;

X<sub>4</sub> is Asn, Glu, Asp, or Met;

X<sub>5</sub> is Leu, Phe, Tyr, Trp, Val, Met, Ile, or Asn;

X<sub>6</sub> is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp, Tyr, Gly, or Thr;

X<sub>7</sub> is Lys, Phe, Asp, Gly, Leu, Asn, Trp, Ala, Gln, or Thr;

X<sub>8</sub> is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln, Trp, His, Arg, Met, Val, or Leu;

X<sub>9</sub> is Gln, Lys, Leu, or Gly;

X<sub>10</sub> is Trp, Ala, or Tyr; and

X<sub>11</sub> is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp, Tyr, Gly, Leu, or Glu.

X<sub>12</sub> is Asn, Asp, Glu, Pro, Gln, Ser, Phe, or Val;

X<sub>13</sub> is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu, Thr, Lys, Trp, or Arg; and

X<sub>14</sub> is Leu, Met, Val, Tyr, Ala, Ile, Trp, His, Pro, Gln, Glu, Phe, Lys, Arg, or Ser.

3. (Previously presented) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

Cys-X<sub>4</sub>-X<sub>5</sub>-X<sub>6</sub>-X<sub>7</sub>-X<sub>8</sub>-X<sub>9</sub>-X<sub>10</sub>-X<sub>11</sub>-Cys, (SEQ ID NO:3)

wherein:

X<sub>4</sub> is Asn, Glu, or Met;

X<sub>5</sub> is Asn, Leu, Met or Phe;

X<sub>6</sub> is Asp, Gly, Ile, Lys Phe or Thr;

X<sub>7</sub> is Ala, Gln, Gly, Lys or Thr;

X<sub>8</sub> is Arg, Asn, Asp, Glu or Gly;

X<sub>9</sub> is Gln, Gly or Leu;

X<sub>10</sub> is Ala, Trp or Tyr;

X<sub>11</sub> is Ala, Gly, His, Phe, Thr or Val.

4. (Original) The polypeptide according to claim 3, wherein:

X<sub>4</sub> is Glu;

X<sub>5</sub> is Asn, Leu, Met or Phe;

X<sub>6</sub> is Asp, Gly, Ile, Lys Phe or Thr;

X<sub>7</sub> is Lys;

X<sub>8</sub> is Arg, Asn, Asp, Glu or Gly;

X<sub>9</sub> is Gln;

X<sub>10</sub> is Trp;

X<sub>11</sub> is Ala, Gly, His, Phe, Thr or Val.

5. (Original) The polypeptide according to claim 3, comprising the amino acid sequence:

X<sub>1</sub>-X<sub>2</sub>-X<sub>3</sub>-Cys-X<sub>4</sub>-X<sub>5</sub>-X<sub>6</sub>-X<sub>7</sub>-X<sub>8</sub>-X<sub>9</sub>-X<sub>10</sub>-X<sub>11</sub>-Cys-X<sub>12</sub>-X<sub>13</sub>-X<sub>14</sub>, (SEQ ID NO:1),

wherein:

X<sub>1</sub> is Asn or Asp;

X<sub>2</sub> is Trp;

X<sub>3</sub> is Asp, Phe or Val;

X<sub>4</sub> is Asn, Glu or Met;

X<sub>5</sub> is Asn, Leu, Met or Phe;

X<sub>6</sub> is Asp, Gly, Ile, Lys, Phe or Thr;

X<sub>7</sub> is Ala, Gln, Gly, Lys or Thr;

X<sub>8</sub> is Arg, Asn, Asp, Glu or Gly;

X<sub>9</sub> is Gln, Gly or Leu;

X<sub>10</sub> is Ala, Trp or Tyr;

X<sub>11</sub> is Ala, Gly, His, Phe, Thr or Val;

X<sub>12</sub> is Asn, Gln, Phe, Ser or Val;

X<sub>13</sub> is Arg, Leu, Pro or Ser; and

X<sub>14</sub> is Leu, Ser, Trp or Tyr.

6. (Previously presented) The polypeptide according to claim 5, having the amino acid sequence:

X<sub>1</sub>-Trp-Val-Cys-Glu-X<sub>5</sub>-X<sub>6</sub>-Lys-X<sub>8</sub>-Gln-Trp-X<sub>11</sub>-Cys-Asn-X<sub>13</sub>-X<sub>14</sub> (SEQ ID NO:2),

wherein:

X<sub>1</sub> is Asn or Asp;

X<sub>5</sub> is Asn, Leu, Met or Phe;

X<sub>6</sub> is Asp, Gly, Ile, Lys, Phe or Thr;

X<sub>8</sub> is Arg, Asn, Asp, Glu or Gly;

X<sub>11</sub> is Ala, Gly, His, Phe, Thr or Val;

X<sub>13</sub> is Arg, Leu, Pro or Ser; and

X<sub>14</sub> is Leu or Tyr.

7. (Original) The polypeptide according to claim 5, comprising an amino acid sequence selected from the group consisting of:

Asn-Trp-Val-Cys-Asn-Leu-Phe-Lys-Asn-Gln-Trp-Phe-Cys-Asn-Ser-Tyr; (SEQ ID NO:4);

Asp-Trp-Val-Cys-Glu-Asn-Lys-Lys-Asp-Gln-Trp-Thr-Cys-Asn-Leu-Leu; (SEQ ID NO:5);

Asn-Trp-Asp-Cys-Met-Phe-Gly-Ala-Glu-Gly-Trp-Ala-Cys-Ser-Pro-Trp; (SEQ ID NO:6);

Asp-Trp-Val-Cys-Glu-Lys-Thr-Thr-Gly-Gly-Tyr-Val-Cys-Gln-Pro-Leu; (SEQ ID NO:7);

Asn-Trp-Phe-Cys-Glu-Met-Ile-Gly-Arg-Gln-Trp-Gly-Cys-Val-Pro-Ser; (SEQ ID NO:8);  
and

Asp-Trp-Val-Cys-Asn-Phe-Asp-Gln-Gly-Leu-Ala-His-Cys-Phe-Pro-Ser. (SEQ ID NO:9).

8. (Original) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

X<sub>1</sub>-X<sub>2</sub>-X<sub>3</sub>-Cys-X<sub>4</sub>-X<sub>5</sub>-X<sub>6</sub>-X<sub>7</sub>-X<sub>8</sub>-X<sub>9</sub>-X<sub>10</sub>-X<sub>11</sub>-Cys-X<sub>12</sub>-X<sub>13</sub>-X<sub>14</sub>, (SEQ ID NO:1), wherein:

X<sub>1</sub> is Asp, Asn, Ala, or Ile;

X<sub>2</sub> is Trp;

X<sub>3</sub> is Val, Ile, Met, Tyr, Phe, Pro, or Asp;

X<sub>4</sub> is Asn, Glu, or Asp;

X<sub>5</sub> is Leu, Phe, Tyr, Trp, Val, Met, Ile, or Asn;

X<sub>6</sub> is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp, or Tyr;

X<sub>7</sub> is Lys, Phe, Asp, Gly, Leu, Asn, or Trp;

X<sub>8</sub> is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln, or Trp;

X<sub>9</sub> is Gln, or Lys;

X<sub>10</sub> is Trp;

X<sub>11</sub> is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp, or Tyr;

X<sub>12</sub> is Asn, Asp, Glu, Pro, Gln, or Ser;

X<sub>13</sub> is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu, Thr, Lys, or Trp; and

X<sub>14</sub> is Leu, Met, Val, Tyr, Ala, Ile, Trp, His, Pro, Gln, Glu, Phe, Lys, or Arg.

9. (Previously presented) The polypeptide of Claim 1, wherein:

X<sub>4</sub> is Asn, or Glu;

X<sub>5</sub> is Leu, Phe, Tyr, Trp, or Ile;

X<sub>6</sub> is Phe, Leu, Asp, Glu, Ile, Ser, Val, or Gly;

X<sub>7</sub> is Lys;

X<sub>8</sub> is Asn, Pro, Gly, Asp, Ala, Ser, His, Met, Val, or Leu;

X<sub>9</sub> is Gln;

X<sub>10</sub> is Trp;

X<sub>11</sub> is Phe, Thr, Ser, Ala, Asn, Val, His, Ile, Trp, Tyr, Leu, or Glu.

10. (Previously presented) The polypeptide of Claim 2, wherein:

X<sub>1</sub> is Asp, or Asn;

X<sub>2</sub> is Trp;  
X<sub>3</sub> is Val, Ile, or Met;  
X<sub>4</sub> is Asn, or Glu;  
X<sub>5</sub> is Leu, Phe, Tyr, Trp, or Ile;  
X<sub>6</sub> is Phe, Leu, Asp, Glu, Ile, Ser, Val, or Gly;  
X<sub>7</sub> is Lys;  
X<sub>8</sub> is Asn, Pro, Gly, Asp, Ala, Ser, His, Met, Val, or Leu;  
X<sub>9</sub> is Gln;  
X<sub>10</sub> is Trp;  
X<sub>11</sub> is Phe, Thr, Ser, Ala, Asn, Val, His, Ile, Trp, Tyr, Leu, or Glu;  
X<sub>12</sub> is Asn, or Asp;  
X<sub>13</sub> is Val, Leu, Ile, Pro, Ala, Gln, Ser, or Met; and  
X<sub>14</sub> is Leu, Met, Val, Tyr, Trp, His, Gln, Arg, or Ser.

11. (Previously presented) The polypeptide according to Claim 2, comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 37-109 and 113-151.

12. (Original) The polypeptide according to Claim 1, 2, 3, 5, 8, 9, or 10, wherein said polypeptide binds to CEA but does not bind to NCA.

13. (Previously presented) The polypeptide according to claim 1, 2, 3, 5, 8, 9, or 10, wherein said polypeptide has a K<sub>d</sub> for CEA which is less than 7 μM.

14. -30. (Cancel)